ACHIEVING A HEART-HEALTHY AND STROKE-FREE NATION

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George A. Mensah, MD, FACP, FACC, FESC, Nancy B. Watkins, MPH, Lazette Lawton, MPH,
Linda J. Redman, MPH, MA, CHES, Kristen M. Pope, MEd

A National Approach for State Heart Disease and Stroke Prevention Programs

Before 1998, public health organizations, especially state health departments, had few resources to comprehensively address heart disease and stroke, even though they are the nation's first and third leading causes of death. In 1998, the U.S. Congress provided funding for the Centers for Disease Control and Prevention (CDC) to initiate a national, state-based heart disease and stroke prevention program. As funding allows, the CDC strategic plan calls for establishing a comprehensive national heart disease and stroke prevention program that supports state-based programs in all states and territories. In 2002, the CDC's Heart Disease and Stroke Prevention Program funded 29 states and the District of Columbia to address heart disease and stroke.

The goals of the national Heart Disease and Stroke Prevention Program are to

- Develop and enhance national and state partnerships and public health capacity to improve cardiovascular health (CVH) and prevent and control cardiovascular disease (CVD).
- Delay the age of onset of heart disease and stroke and associated morbidity and disability.
- Translate prevention science into strategies and practices.
- Define and conduct public health research and evaluation.
- Monitor changes in heart disease and stroke risk factors, program outcomes, and policy and environmental indicators.
- Maximize resources through collaboration with partners.

CDC plays a national leadership role in promoting heart health and reducing the burden of heart disease and stroke. This leadership involves collaborating with many sectors—local, state, and federal governments; community and volunteer organizations; academic institutions; faith-based organizations; schools; work sites; health care settings; and the media—to achieve the vision of a heart-healthy and stroke-free nation.

The Burden of Heart Disease and Stroke in the United States
Magnitude

Heart disease and stroke are the principal components of cardiovascular disease, the leading cause of death and disability among adults in the United States.[1] As the burden of heart disease and stroke continues to grow, CVD is projected to be the number one cause of death worldwide by the year 2020. In 1999, the overall worldwide death rate for CVD was 354.1 per 100,000 people: 303.2 per 100,000 women and 418.2 per 100,000 men.[2] In the United States, CVD affects 61.8 million Americans and claims nearly one million lives annually. More than one in five people has some form of CVD,[1] which affects people of all racial/ethnic groups and ages. Although CVD death rates decreased in the 1980s and 1990s, the actual numbers of CVD-related deaths increased because of increases in the number of older Americans. In addition, the rate of decline in deaths from heart disease and stroke has slowed significantly in recent years. Meanwhile, hospitalizations for heart failure have increased steadily since 1975.[3, 4]

In the United States, 1.1 million heart attacks occur each year, and coronary heart disease causes more than 515,000 deaths, or about one death every minute. Almost half (250,000) of those who die of coronary heart disease do not live to reach the hospital. Of those who have a heart attack, 25% of men and 38% of women will die within a year despite medical and surgical interventions. Those who survive longer are at high risk for a recurrent heart attack and death and may have significant discomfort and disability. Almost 150,000 of those who die of CVD each year are younger than age 65, and sudden or unexpected cardiac deaths among young adults have increased in recent years.[1] Heart failure is diagnosed for the first time in approximately 550,000 Americans each year, and more than 51,000 deaths annually are due to this condition.

In addition, the 700,000 strokes that occur each year cause more than 167,000 deaths, or approximately 1 death every 3 minutes. Among survivors, 15%–30% are permanently disabled.[1]

These CVD events and conditions are manifestations of atherosclerosis, a disease process that often begins in childhood and adolescence. The major risk factors for atherosclerosis and its complications are high total cholesterol and high blood pressure. Diabetes also increases a person's risk for CVD. These risks arise from dietary imbalance (such as excessive intake of animal fats and calories), physical inactivity, and use of tobacco products. These underlying behavioral risks and their health consequences are rooted in social and environmental conditions that foster unhealthy lifestyle choices. Therefore, population-based approaches addressing policy and environmental change must be a major focus of a successful national public health approach.

Disparities

In 2000, CVD was the leading cause of death among both women and men in the United States. CVD causes more deaths among women than among men, in part because of the greater number of older women in the population. African Americans are at substantially higher risk for death from CVD than

are whites. This difference is attributable in part to a greater risk for strokes and a higher prevalence of high blood pressure among African Americans. For every 100,000 people, the rate of death from CVD was 509.6 for African American men, 397.6 for white men, 397.1 for African American women, and 285.8 for white women. The rate of death due to high blood pressure per 100,000 people was 46.3 for African American men, 13.2 for white men, 40.8 for African American women, and 13.1 for white women.[1]

Data indicate substantial disparities in risk factors for CVD among racial and ethnic groups in the United States (Table 1).[1] Risk behaviors and risk factors such as obesity and diabetes are more prevalent among African Americans and Mexican Americans than among non-Hispanic whites. For example, physical inactivity is higher among Mexican American women (57%) and non-Hispanic African American women (57%) than among non-Hispanic white women (39%). These disparities undoubtedly contribute to the substantially greater burden of CVD among these two population groups.

Costs

The estimated cost of CVD to the nation is expected to exceed $351 billion in 2003.[1] The direct costs for health care are projected to be $209.3 billion, while lost productivity accounts for an additional $142.5 billion. One-quarter of the lost productivity amount is due to disability that results in unemployment, and three-quarters is due to premature death (death before age 65).

These sobering figures can only be expected to increase unless effective programs and policies are implemented nationwide to reduce the burden of CVD. Future cost increases will be created in part by the aging of the population and by the growth of ethnic minority populations at high risk for CVD.[3] Advances in medical technology also can be expected to increase the cost of services for each CVD event. In addition to these financial costs, CVD creates social costs to families and communities that cannot be calculated.

Table 1. Prevalence of Risk Factors for CVD in the United States, by Race/Ethnicity and Gender, American Heart Association, 2003

Risk Factors and Conditions	Race/Ethnicity and Gender					
	Non-Hispanic Whites		African Americans		Mexican-Americans	
	Males	Females	Males	Females	Males	Females
High blood pressure[a]	25.2	20.5	36.7	36.6	24.2	22.4
High LDL-cholesterol[b]	49.6	43.7	46.3	41.6	43.6	41.6
Smoking[c]	25.8	21.6	26.1	20.8	24.1	123
Physical Inactivity[d]	32.5	36.2	44.1	55.2	48.9	57.4
Obesity[e]	27.3	30.1	28.1	49.7	28.9	39.7
Diabetes[f]	5.4	4.7	7.6	9.5	8.1	11.4

[a] Systolic blood pressure ≥140 mm Hg, diastolic blood pressure ≥90 mm Hg, or on anti-hypertensive medication: age adjusted for people aged 20 and older.
[b] LDL-cholesterol ≥130 mg/dL: age adjusted for people aged 20 and older.
[c] Among people aged 18 years and older.
[d] No leisure time activity among people aged 18 years and older.
[e] Body mass index ≥30 kg/m² among people aged 20 and older.
[f] Physician-diagnosed diabetes: age adjusted for people aged 20 and older.
Source: *Heart and Stroke Statistics—2003 Update.*[1]

If all major forms of CVD were eliminated, life expectancy would be extended by almost 7 years.[1] In addition, Americans' quality of life would be greatly improved, and health care costs and dependency would be substantially reduced.

Healthy People 2010: Heart Disease and Stroke

National health goals and objectives for the current decade are published in *Healthy People 2010* and include those for heart disease and stroke in Chapter 12.[5] CDC and the National Institutes of Health are co-leads for goals for heart disease and stroke. The universal goals of *Healthy People 2010* are to improve the quality and increase the duration of people's lives and to eliminate disparities. The one goal specific to

preventing heart disease and stroke has three components:

- Prevention, detection, and treatment of risk factors.
- Early identification and treatment of heart attacks and strokes.
- Prevention of recurrent cardiovascular events.

The following 16 objectives from chapter 12 of *Healthy People 2010* address heart disease, congestive heart failure, stroke, high blood pressure, and high total blood cholesterol levels. Fortunately, because most cardiovascular disease is preventable, much can be done to lessen the burden of heart disease and stroke and meet *Healthy People 2010* objectives.

12.1 Reduce coronary heart disease deaths.
Baseline: 208 deaths per 100,000 in 1998 (age-standardized to 2000).
Target: 166 deaths per 100,000; 20% improvement.

12.2 (Developmental) Increase the proportion of adults aged 20 years and older who are aware of the early warning symptoms and signs of a heart attack and the importance of accessing rapid emergency care by calling 911.

12.3 (Developmental) Increase the proportion of eligible patients with heart attacks who receive artery-opening therapy within an hour of symptom onset.

12.4 (Developmental) Increase the proportion of adults aged 20 years and older who call 911 and administer cardiopulmonary resuscitation (CPR) when they witness an out-of-hospital cardiac arrest.

12.5 (Developmental) Increase the proportion of persons with witnessed out-of-hospital cardiac arrest who are eligible and receive their first therapeutic electrical shock within 6 minutes after collapse recognition.

12.6 Reduce hospitalizations of older adults with heart failure as the principal diagnosis.
For people aged 65–74 years: 1997 baseline, 13.4/1,000; target, 6.5/1,000.
For people aged 75–84 years: 1997 baseline, 26.9/1,000; target, 13.5/1,000.
For people aged 85 years and older: 1997 baseline, 53.1/1,000; target, 26.5/1,000.

12.7 Reduce stroke deaths.
Baseline: 60 deaths per 100,000 in 1998 (age-standardized to 2000).
Target: 48 deaths per 100,000; 20% improvement.

12.8 (Developmental) Increase the proportion of adults who are aware of the early warning symptoms and signs of a stroke.

12.9 Reduce the proportion of adults with high blood pressure.

Baseline: 28% of adults aged 20 years and older in 1988–1994 (age-standardized to 2000).
Target: 16%.

12.10 Increase the proportion of adults with high blood pressure whose blood pressure is under control.
Baseline: 18% of adults aged 18 and older with high blood pressure had it under control in 1988–1994 (age-standardized to 2000).
Target: 50%.

12.11 Increase the proportion of adults with high blood pressure who are taking action (for example, losing weight, increasing physical activity, and reducing sodium intake) to help control their blood pressure.
Baseline: 72% of adults aged 18 and older with high blood pressure were taking action to control it in 1998 (age-standardized to 2000).
Target: 95%.

12.12 Increase the proportion of adults who have had their blood pressure measured within the preceding 2 years and can state whether their blood pressure was high or normal.
Baseline: 90% of adults aged 18 and older (age-standardized to 2000).
Target: 95%.

12.13 Reduce the mean total blood cholesterol levels among adults.
Baseline: mean 206 mg/dL among adults aged 20 years and older in 1988–1994 (age-standardized to 2000).
Target: 199 mg/dL.

12.14 Reduce the proportion of adults with high total blood cholesterol levels.
Baseline: 21% of adults aged 20 years and older with total blood cholesterol levels ≥240 mg/dL in 1988–1994 (age-standardized to 2000).
Target: 17%.

12.15 Increase the proportion of adults who have had their blood cholesterol checked within the preceding 5 years.

Baseline: 68% of adults aged 18 and older (age-standardized to 2000).
Target: 80%.

12.16 (Developmental) Increase the proportion of persons with coronary heart disease who have their LDL-cholesterol level treated.

Other objectives relevant to heart disease and stroke can be found in *Healthy People 2010* chapters addressing chronic kidney disease, tobacco use, access to quality health services, nutrition and overweight, physical activity and fitness, and public health infrastructure. This broad spectrum of goals and objectives represents a wide range of opportunities for prevention programs.

Public Health Opportunities

Health Promotion and Primary and Secondary Prevention

Preventive strategies, the traditional focus of public health programs, should include overall *health promotion* as well as *primary* and *secondary prevention.*

Health promotion targets the general population. This strategy enables people to gain control over the behaviors and conditions that affect their health status. Educational campaigns to increase public awareness of the signs and symptoms of heart attack and stroke, policy changes to ensure universal 9-1-1 coverage, and policy and environmental changes that support heart-healthy behaviors in the general population are examples of health promotion strategies.

Primary prevention targets people who are at increased risk for a first CVD event because they have one or more CVD risk factors. Guidelines from the American Heart Association (AHA) and other national organizations advocate for primary prevention of CVD by addressing the risk factors of high blood pressure, high cholesterol, tobacco use, poor nutrition, physical inactivity, overweight and obesity, and diabetes.

Secondary prevention targets populations with established CVD to prevent recurrent events. These strategies include ensuring compliance with guidelines on the use of aspirin, beta-blockers, ACE inhibitors, anticoagulants, and other antiplatelet

agents. In addition, reducing risk factors through lifestyle changes such as losing weight and quitting smoking is an important strategy for secondary as well as primary prevention.

Although other classification systems may include tertiary prevention, our program groups this prevention level with secondary prevention.

Essential Strategies: The Socioecological Approach

Because of the complexity of the CVD burden, comprehensive programs are needed to reduce CVD rates, eliminate disparities, and achieve the long-term goals of *Healthy People 2010.* Key components of a state heart disease and stroke prevention program include the following:

- Promotion of CVH to prevent the development of risk factors (e.g., high blood pressure, high cholesterol, tobacco use, physical inactivity, and poor nutrition) and conditions (e.g., diabetes and obesity).
- Primary prevention of heart disease and stroke.
- Secondary prevention of heart disease and stroke.
- Elimination of health disparities for heart disease and stroke.
- Heart-healthy policies and supportive environmental changes.
- Programs in multiple settings: health care, work sites, schools, and communities.

Research and experience indicate that health is connected to both the physical and social environment. Individual behaviors are supported and reinforced in numerous ways by legislation, regulations, organizational policies, social norms, and environments. For this reason, a comprehensive and integrated approach to promoting CVH and addressing CVD requires not only education and increased awareness, but also a major emphasis on environmental and policy change at multiple levels of society. Changes in policy and the social and physical environment are necessary to foster and maintain individual-level behavior change; for example, restricting young people's access to tobacco products will reduce the likelihood that they will use tobacco.[6] Approaches

should address policy and environmental change in multiple settings (e.g., health care, work sites, schools, communities) to reach people throughout their lives with a variety of messages and interventions. The primary roles of state heart disease and stroke prevention programs are to provide public and professional education and training and to facilitate policy and environmental changes. In addition, state heart disease and stroke prevention programs should work with partners to ensure that they provide appropriate interventions for behavior change among individuals.

Policy and environmental approaches are part of three core functions of public health: assessment, policy development, and assurance. According to a 2001 Institute of Medicine report, "An understanding of the social factors influencing behavior is growing and should be considered in programs and policies for public health. Many social, economic, political, and cultural factors are associated with health and disease for which changes in individual health behaviors alone are not likely to result in improved health and quality of life...The law can change the informational, physical, social, or economic environment to facilitate healthier behavior."[7] The report states that "program planners and policy makers need to consider modifying social and societal conditions to enable healthy behavior. Use of population-based policy and environmental strategies shifts public health from a direct service role to one that focuses on guidance, agenda setting, and coordination of CVH improvement efforts."[7]

The socioecological approach is the basis for CDC's logic model for state heart disease and stroke prevention programs (Figure 1). The model depicts relationships between actions (e.g., links between environmental and policy changes and individual-level behavioral change) that are necessary to reduce rates of CVD. Because logic models are often cyclical, an outcome from one activity can provide information that then feeds back into a previous activity. State activities involve building capacity, conducting surveillance, and developing/establishing

interventions. These activities influence changes that lead to short-term outcomes such as the development of a CVH state plan, new strategies for system-level changes, and more effective implementation of interventions. These activities and outcomes result in changes in policy and environmental supports, changes in people's behavior, and eventually improvements in their health.

The state program logic model describes the program and is a tool to guide program evaluation. By identifying the steps necessary to reach intended outcomes, the logic model indicates where emphasis should be placed in evaluating the process and outcomes of the program. More guidance is provided in the *Evaluation Framework for the State Heart Disease and Stroke Prevention Programs* and the *State Heart Disease and Stroke Prevention Programs: Evaluation Concepts* (available from the CDC Heart Disease and Stroke Prevention Program).

Interventions

State heart disease and stroke prevention program interventions should address the population as a whole while giving special attention to priority populations (e.g., populations that the state determines to be priority for CVH interventions on the basis of such factors as rates of cardiovascular disease and related risk factors, lack of access to services, and socioeconomic levels). Interventions should

- Be culturally appropriate.
- Use population-based strategies such as environmental and policy changes.
- Increase education on and awareness of heart disease and stroke issues among the public, decision makers, and health care professionals.
- Monitor primary and secondary prevention services to ensure the provision of quality care.

Programs should emphasize interventions at the state level and in various settings (e.g., health care, work sites, schools, community) in which policy or environmental changes can produce substantial

Figure 1. Logic Model for State Heart Disease and Stroke Prevention Programs
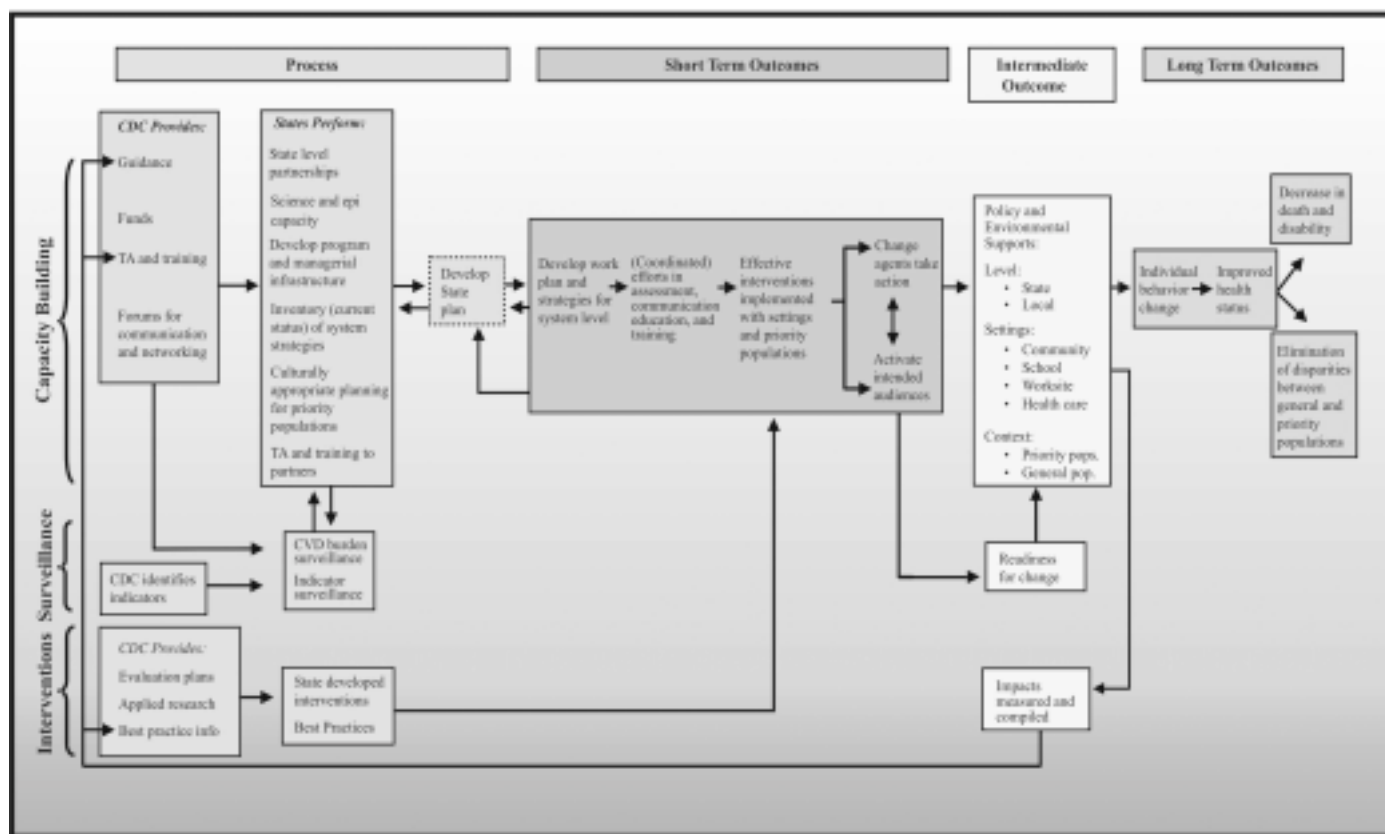
health benefits. However, they should focus their efforts at the highest level possible; for example, activities should focus on business coalitions and unions rather than individual work sites and on managed care organizations and state medical associations rather than on individual health care settings or physicians.

Population-based approaches can be disseminated through various settings and groups. Policy and environmental changes and education should be used to make each setting more supportive of heart-healthy choices and ensure that it provides appro-priate CVH promotion and CVD prevention and control services. Settings in which policy and environmental changes might be instituted include the following:

- State-level and government settings (e.g., creating smoke-free environments in state buildings, requiring health care coverage that reimburses for primary and secondary prevention services related to CVD, providing high blood pressure medication to people on limited incomes, establishing statewide 9-1-1 coverage, requiring training [e.g., protocols for working with stroke patients for emergency medical staff], and accrediting food services).

- Health care settings (e.g., implementing primary and secondary prevention guidelines for heart disease and stroke to ensure quality of care).

- Work sites (e.g., providing blood pressure screening and monitoring, having staff trained on use of CPR and AEDs, providing time for and access to physical activities, establishing clean indoor air policies, and offering heart-healthy food options in cafeterias and vending machines).

- Schools (e.g., educating students about healthy lifestyle choices, heart disease and stroke, and CPR; providing heart-healthy school food choices; and requiring schools to be tobacco-free).

- Communities (e.g., providing blood pressure screening at all fire stations, ensuring 9-1-1 coverage, building parks).

In addition, the media can be used to increase public awareness of the importance of CVH, the risk factors for CVD, and the need for policy and environmental changes. The media can also be instrumental in educating the public about the signs and symptoms of heart attack and stroke and when to call 9-1-1.

Key partners for implementing these activities should include the American Heart Association (AHA), state quality improvement organizations (QIOs), and private health care providers and hospitals. The state heart disease and stroke prevention program should partner with its QIO to monitor secondary prevention practices (e.g., aspirin and drug therapy, physical activity regimens, and hypertension and lipid management) and to help improve compliance with secondary prevention guidelines. In collaboration with partners, it should also promote professional education and policy changes that support efforts to implement the guidelines on primary and secondary prevention. Providing blood pressure and cholesterol screenings is not appropriate for the state heart disease and stroke prevention program itself. However, the state program should encourage partners to provide these services and ensure that health care staff are trained in accurately measuring blood pressure and in applying quality assurance standards.

Interventions should be coordinated with internal and external partners to ensure that health messages, policies, and environmental measures are consistent, effective, synergistic, and not redundant. Further research is needed on how to best implement intervention strategies in different settings and with different populations.

For further discussion of effective interventions to address heart disease and stroke, please refer to related chapters in this document, including those on tobacco, school health, nutrition, physical activity, and diabetes.

State Examples:

- The *Tri-State Stroke Network,* which includes representatives of the Georgia, South Carolina, and North Carolina CVH programs, works to increase public awareness of stroke symptoms and the need to treat stroke as a medical emergency. One of the main objectives of the network is to promote the development and implementation of stroke prevention and control programs in the Tri-State area.
  Program contact: Tynetta Brown, Cardiovascular Health Program, North Carolina Division of Public Health/DHHS.

- The *Missouri CVH Program* has partnered with the state Diabetes Prevention and Control Program (DPCP) to establish a diabetes/CVD collaborative to improve the care that federally qualified health centers provide to people with these conditions. The collaborative focuses on system changes (e.g., in delivery system design, decision support, clinical information systems, and self-management support) in these health centers. In addition, the CVH Program and the DPCP have supported the statewide establishment of the American Diabetes Association's "ABC Campaign," which focuses on managing clinical factors related to diabetes and CVD, including blood pressure and cholesterol levels.
  Program contact: Diana Hawkins, Cardiovascular Health Program, Missouri Department of Health.

- The *New York Healthy Heart Program* assesses supports for CVH in work sites with a high need and high readiness for change and with a preponderance of low-income employees. Heart-healthy policies and environments are assessed using a tool (Heart Check) developed by the program. Following an initial 3-year intervention, a reassessment with Heart Check indicated that participating work sites had increased policy and environmental supports for heart health by 65%. Many of these work sites now are making blood pressure screening available, offering low-fat food choices in vending machines, instituting smoke-

free policies, and providing physical activity breaks during the workday.[8]

Program contact: Margaret Casey, Healthy Heart Program, New York Department of Health.

- The *North Carolina CVH Program* collaborates on the BASIC Preventive Benefits Initiative with North Carolina Prevention Partners, which includes a variety of health plans and employers, the state QIO, and various HHS programs. The initiative is working to ensure that benefits to prevent CVD are voluntarily purchased by employers, voluntarily covered by insurers, and offered by providers and health systems. The initiative aims to increase the quality of care received by consumers and to improve the health status of individuals and populations. From 1998 through 2002, the initiative has led to a 75% increase in the number of health plans offering tobacco, nutrition, and physical activity insurance products to employer groups.

  Program contact: Libby Puckett, Cardiovascular Health Program, North Carolina Division of Public Health/DHHS.

- The *Wisconsin CVH Program* is collaborating with its state QIO and DPCP to collect Health Plan Employer Data and Information Set (HEDIS) indicators for diabetes, cholesterol, and high blood pressure. These indicators will enable the program to work with participating health care providers to implement system enhancements to improve these CVD-related measures.

  Program contact: Mary Jo Brink, Cardiovascular Health Program, Wisconsin Division of Public Health.

Infrastructure to Support State Heart Disease and Stroke Prevention Programs
Program Management and Administration

A strong system of management, staff, and support are necessary to effectively address CVH at the state level. A state heart disease and stroke prevention program in a state health department should have staff who are able to

- Provide leadership for overall program development, program coordination, and implementation.

- Use a variety of data to assess the burden of CVD, CVD-related disability, and risk factors, and interpret data for program planning.
- Frame public health issues for policy makers and apply policy and environmental strategies to improve CVH.
- Develop and maintain partnerships.
- Carry out health communications, health education, training, advocacy, and media activities.
- Provide appropriate support to community-based intervention programs in a variety of settings and work with diverse populations.
- Develop and analyze health policy.
- Provide policy and administrative support for CVH program activities.
- Ensure that programs are implemented with integrity and evaluated for effectiveness.

Qualified personnel at the state, regional, and local levels are critical to implementing and managing a comprehensive heart disease and stroke prevention program. The program manager should have the skills to collaborate with internal and external programs and organizations and to facilitate program planning and development. The CVH staff should include a chronic disease epidemiologist, who can access and analyze a variety of data sets to define and document the burden of CVD. CDC recommends that the core staff also include from 6 to 15 additional people in such positions as policy analyst, health educator, program evaluator, secondary prevention specialist, statistician, and health communication specialist to address strategic planning, policy and environmental approaches, communication, priority populations, and population-based interventions. States may want some of these positions at a district or regional level. CVH staff also need skills for working in multiple settings and with a variety of partners, including the state department of education, public safety, and emergency medical services; academic institutions; managed care organizations; federally qualified health centers; and voluntary health agencies such as the AHA.

State health department structure and management should encourage collaboration between the state heart disease and stroke prevention program and related programs such as coordinated school health, diabetes, tobacco control, physical activity, and nutrition.

Surveillance and Evaluation

The burden of CVD in the state should be well defined. To assess that burden, the state health department needs capacity in the areas of chronic disease epidemiology, statistics, surveillance, data analysis, and the application of data in program planning and priority setting. State staff should be able to use data to support allocating resources to CVH prevention.

Staff should have access to data systems such as vital statistics, the Behavioral Risk Factor Surveillance System (BRFSS), the Youth Risk Behavior Survey, hospital discharge data, HEDIS, Medicaid and Medicare data, and other data sources that are useful for defining the burden of CVD in the state. In addition, state heart disease and stroke prevention program staff should be able to use data from geographic information systems to document the distribution of CVD, delineate disparities, and specify the needs of priority populations. (Geographical data by state and county are available on CDC's Heart Disease and Stroke Prevention Program Web site: www.cdc.gov/cvh.)

The BRFSS modules on hypertension awareness, cholesterol awareness, cardiovascular disease, and heart attack and stroke signs and symptoms should be part of the state BRFSS survey; optional modules and state-added questions should be used to help the state program track trends in CVD and related risk factors. The state BRFSS sample size should be large enough to gather statistically adequate responses for priority populations, including racial and ethnic groups. States should consider surveillance questions as a means for gathering community- and regional-level data for targeted interventions.

Communication strategies should be based on state and local data so that partners and the public understand CVD's relevance to, and impact on, both their personal health and the health of the people in their communities. A published document defining the burden of CVD in the state should communicate data in ways that are appropriate for different audiences, including community groups, state leaders, and decision makers. It should describe the burden of CVD (primarily heart disease and stroke) and related risk factors and conditions (e.g., high blood pressure, high cholesterol, tobacco use, physical inactivity, poor nutrition, diabetes). The document should describe the geographic and demographic distribution of CVD, highlighting disparities in CVD burden based on geography, gender, socioeconomic status, and race and ethnicity. It should also identify trends in CVD, including changes in numbers of deaths, average age at onset of disease, and average age at death.

This burden document should be used as a tool to increase public awareness of CVD as a public health priority, to mobilize partners to address CVD in a comprehensive manner, and to support the commitment of resources to promoting CVH. Data can be presented to staff, partners, community groups, policy makers, and decision makers to enhance their understanding of how to use data for program planning. The data should provide a basis for developing the CVH state plan and for identifying priority populations and strategies.

Program evaluation is essential for planning programs and building the scientific capacity of state health departments. State heart disease and stroke prevention program staff should have a good understanding of methodologies to evaluate process and outcome and should develop and implement an evaluation plan. State health departments should be able to validate and demonstrate the existence of "core capacities," which include committed partnerships; surveillance, assessment, and evaluation functions; the ability to document the burden of

CVD; the ability to develop a comprehensive CVH state plan; training and technical assistance capabilities; and the ability to identify or devise population-based intervention strategies that are culturally competent and address priority populations. Without this basic infrastructure in place, CVH activities may be scattered and lack focus and thus have a limited impact on the cardiovascular health of state residents.

State heart disease and stroke prevention programs should also evaluate short-term, intermediate, and, when possible, long-term outcomes. When designing their evaluation, the state program should use evaluation tools provided by CDC, including the *Evaluation Framework for the State Heart Disease and Stroke Prevention Programs* which describes the overall evaluation component of state programs; the State Program Logic Model, a graphic description of the state heart disease and stroke program (see Figure 1), and the *State Heart Disease and Stroke Prevention Programs: Evaluation Concepts,* which assists states in developing evaluation plans for their individual CVH programs.

State Examples:

- The *Mississippi CVH Program* collaborated with its AHA state affiliate to produce the *2000 Mississippi State of the Heart Report* and the *2000 Mississippi Stroke Report.* These documents contain data on CVD-related illness, death, and risk factors. Data include county-specific mortality rates depicted in county maps, which have a visual impact for local legislators. Strategies to reduce risk behaviors also are listed in the reports. The reports have been shared with members of the Mississippi Chronic Illness Coalition to increase their awareness of the burden of these diseases, provided to legislative study committees to enhance their understanding of the need for policy and environmental supports to reduce CVD, and used by public health staff to guide program planning.
  Program contact: Wanda Magers, Cardiovascular Health Program, Mississippi State Department of Health.

- The *West Virginia CVH Program* produced a burden report in 2001 that includes data on mortality rates, behavioral risk factors, cost, and access to medical care. The report also describes CVH program goals and activities to eliminate health disparities. In March 2002, this report was placed on the West Virginia Department of Health and Human Resources, Bureau of Public Health Web site, where West Virginia risk factor data could be compared with national risk factor data. The report was used to establish the CVH Program's priorities, track changes in data trends, and help the state coalitions implement strategies to achieve CVH goals.
  Program contact: Amy Carte, Cardiovascular Health Program, West Virginia Bureau for Public Health.

- The *Oregon CVH Program* compared the prevalence of major CVD risk factors, including hypertension and high cholesterol levels, among Medicaid-eligible residents with their prevalence among the general population and evaluated associations between these risk factors and Medicaid claims for CVD hospitalization. It found that CVD risk factors are more common among Oregon's Medicaid populations than among the general population and are associated with CVD hospitalizations among the former group. The CVH Program is using this information to identify priority populations and to help set program priorities.
  Program contact: Laura Chenet Leonard, Cardiovascular Health Program, Oregon Department of Human Services.

- The *New York Healthy Heart Program* has developed a reporting system to monitor policy and environmental changes occurring in work sites so that it can evaluate the outcomes of its work site interventions. It is evaluating the Heart Check tool to determine whether the number of questions for the work site assessment can be reduced, thereby increasing ease of use. Pre- and post-Heart Check scores have increased an average of 75%, with improvements in nutrition, physical activity, and administrative support.

Program contact: Margaret O. Casey, Healthy Heart Program, New York State Department of Health.

Partnerships

The multifaceted nature of opportunities for promoting CVH and preventing CVD requires the cooperation and collaboration of many partners in public and private sectors. A key task for partners is to develop a comprehensive CVH state plan and ensure that it is implemented. The involvement of partners should promote the coordination of activities to avoid duplication of effort and to share responsibility for improving CVH. The state health department should secure the involvement of diverse partners and provide leadership.

The state heart disease and stroke prevention program should partner internally with state health department programs that address the following:

- CVD-related risk factors, such as high blood pressure, high cholesterol, tobacco use, physical inactivity, and poor nutrition.
- Related areas, such as diabetes and school health.
- Priority populations.
- Data (e.g., vital statistics, the state's BRFSS).

The state heart disease and stroke prevention program should also form external partnerships with the following types of organizations:

- State agencies that address CVD risk factors, such as the departments of education, public safety, and emergency medical services.
- Organizations whose missions are associated with promoting heart health and reducing heart disease and stroke, such as the AHA.
- Other professional and voluntary organizations interested in improving health and quality of life and eliminating disparities in CVD burden, such as quality improvement organizations, minority health organizations, health care organizations, media, community-based organizations, academic institutions, and businesses.

In addition, the state health department should collaborate with academic institutions and Prevention Research Centers (see www.cdc.gov/prc) to conduct research to improve programs and policies for CVH promotion and CVD prevention; to translate knowledge from social, behavioral, and medical sciences into sound public health practice; and to ensure that program interventions and evaluations are well grounded in science.

State Examples:

- The *Virginia CVH Program* coordinates strategic partnerships through the Healthy Pathways Coalition. The coalition is charged with comprehensively addressing primary and secondary prevention of CVD and promoting CVH. Partners represent private and governmental state-level organizations, including those representing priority populations. The CVH Program has developed a logic model that clarifies relationships among partners, sectors, and program activities. The logic model is being used to guide the coalition's strategic planning and will be in the resulting Call to Action document.
  Program contact: Jody Stones, Cardiovascular Health Program, Virginia Department of Health.
- The *Utah CVH Program's* key state partners form the Alliance for Cardiovascular Health in Utah. The alliance comprises more than 140 organizations representing government, private businesses, health care organizations, and nonprofit agencies. The alliance has developed a 3-year CVH plan (Uniting Partners for a Legacy of Health), which is designed to coordinate efforts among organizations and identify key strategies, with an emphasis on policy and environmental supports.
  Program contact: Joan Ware, Cardiovascular Health Program, Utah Department of Health.

State Plans

State heart disease and stroke prevention programs need a comprehensive plan that identifies their priorities and focuses the efforts of their many partners. The state health department and its diverse

partners should develop and regularly update this plan, which should present strategic objectives that require leadership, ownership, coordination, and commitment of resources by both public- and private-sector partners. It should be a state heart disease and stroke prevention program plan and not a state health department plan. The strategic objectives should include population-specific strategies that address the needs of priority populations and should emphasize policy and environmental approaches, systems changes, and educational interventions that increase support for heart-healthy choices and provide a context for more effective CVD prevention.

The CVH state plan should be based on data, including the burden of CVD in the state and the results of an assessment of policies and legislation that influence heart health. It should also be based on an assessment of regulations, policies, and environmental barriers in work sites, health care settings, schools, and communities. The results of such an assessment will help program planners identify systems change interventions that may be needed to achieve the objectives of the CVH state plan.

The CVH state plan may be a stand-alone plan or an identifiable section within another state plan, such as a larger chronic disease plan. In either case, it should provide guidance for a comprehensive state heart disease and stroke program. The CVH state plan may be packaged in a variety of formats (e.g., executive summary, monograph, visual presentation) for different audiences (e.g., decision makers, public health planners, the health care community, minority health organizations, the general public).

Although developing and updating a comprehensive CVH state plan requires a major commitment of time and staff, such a plan can play a critical role in attaining the state's heart disease and stroke objectives.

State Examples:

- The *North Carolina Plan to Prevent Heart Disease and Stroke 1999–2003* provides a comprehensive vision that builds upon existing services and

promotes new strategies for preventing CVD. The plan is based on the socioecological prevention model, which has been proven effective for creating environmental and policy change in multiple levels of society. The plan guides state and local interventions by providing strategies for preventing CVD risk factors, managing CVD, raising public awareness, and developing supportive policies. The plan's strategies are designed to be implemented in collaboration with partners from private and governmental sectors. It will be updated in 2003.
  Program contact: Libby Puckett, Cardiovascular Health Program, North Carolina Division of Public Health/DHHS.

- The *Alabama Cardiovascular State Health Plan* contains recommendations for changing policies, health systems, community settings, and environmental factors that influence CVH. The plan is designed to help policy makers, public health personnel, health care providers, schools, communities, and voluntary organizations develop coordinated approaches to CVD prevention. The plan is organized around three major goals: increasing awareness of CVD and how various sectors (e.g., health care providers and payers, schools, communities) can promote CVH; minimizing CVD risk factors through supportive environments; and promoting the use of recommended treatment guidelines by health care providers and facilitating state residents' access to and use of early detection and treatment options for CVD.
  Program contact: Janice Cook, Cardiovascular Health Program, Alabama Department of Public Health.

Policies

To identify priority policy areas for intervention, the state heart disease and stroke prevention program should assess existing policy and environmental supports. The assessment should also identify elements of the physical and social environments that can be modified to improve CVH-related behaviors.

The assessment should address the needs of priority populations and should focus on health promotion and primary and secondary prevention of CVD and related risk factors, including high cholesterol, high blood pressure, tobacco use, physical inactivity, and poor nutrition. The assessment should identify policies at the state level that could affect communities, such as state legislation that may affect CVH-related policies in schools or agency policies that may affect the implementation of nationally accredited guidelines for primary and secondary prevention of CVD in health care settings.

Although the assessment should initially identify state-level policies and environmental supports, additional assessments should eventually be conducted to identify policies in health care sites, work sites, schools, and communities. As a planning tool, the assessment does not need to be performed statewide for each setting, but the geographical area selected should be justified and should help the state meet the objectives of its CVH state plan.

State Examples:
• The *Oklahoma Cardiovascular Health Program* assessed policies guiding stroke response and care and is working with local heath departments and hospitals to develop stroke protocols. The protocols will guide emergency medical personnel and other hospital personnel in providing comprehensive, appropriate care for stroke patients from the initial call for emergency services through rehabilitation. The CVH Program is collaborating with the AHA Oklahoma affiliate; Oklahoma Foundation for Medical Quality; Oklahoma Hospital Association; and local hospital physicians, stroke coordinators, and emergency medical service units. Although modified to meet Oklahoma's needs, the protocols are based on those developed by the AHA and the National Stroke Association.
  Program contact: Adeline Yerkes, Chief, Chronic Disease Service, Oklahoma State Department of Health.

• *The Healthy Maine Partnership* is a collaborative effort of the Maine Cardiovascular Health Program, the Community Health Program, Partnership for a Tobacco-Free Maine, and the Coordinated School Health Program. The Healthy Maine Partnership is working with 31 local communities and 54 school administrative units to assess local and school policies supporting cardiovascular health, such as tobacco-use policies in public places and nutrition guidelines in schools. The Maine Cardiovascular Health Program will use the assessment results to identify supportive policies and key partners for future policy development.
  Program contact: Debra Wigand, Maine Cardiovascular Health Program, Department of Human Services.

Health Communications

State heart disease and stroke prevention programs and their partners should have the capacity to effectively plan, implement, and evaluate communications and education strategies that support policy and environmental changes for CVH. Recognizing the need for a tool that incorporates the most effective communication models and strategies for change, CDC's Heart Disease and Stroke Prevention Program has developed a tailored edition of CDCynergy for CVH. CDCynergy is a communication planning tool in CD-ROM format that was first created by CDC's Office of Communication in 1998 and then updated as CDCynergy 2001 Basic. The CVH edition has the same features and format as CDCynergy 2001 Basic but includes CVH case examples and resources. It effectively moves the best communication practices promoted by CDC into the mainstream of CVH policy and environmental change efforts. In addition to providing training on specific communication topics such as media and policy advocacy and product development, the tool will help users strategically convey information in ways that advance the overall program goal of making states heart healthy and stroke free.

Communication plans created by state heart disease and stroke prevention programs using CDCynergy 2001 should be based on data from state surveys and burden documents, CVH state plans, and policy inventories. The communication plan should involve partners and their communication resources and should consider multiple and innovative channels to convey key messages, including conferences, work-shops, and seminars for select audiences; media outreach; and personal contact with policy and decision makers in health care, workplace, school, and community settings.

State Examples:

- The *West Virginia CVH Program's* partnership with St Mary's Hospital, Genesis Hospital System, led to the development of a social marketing campaign to educate residents of Lincoln County about the symptoms of heart attacks. CDCynergy was used to plan the campaign, and data from BRFSS, household surveys, Prizm national consumer surveys, and hospitals were used to select the target county and develop media messages. Four radio spots and print ads were developed, and a pretest telephone survey was conducted in February 2001. The media campaign was launched in May 2001. It promoted awareness of the symptoms of a heart attack, the importance of immediate medical care, and healthy choices for daily living. The posttest telephone survey was conducted in December 2001 and showed an increased public interest (from 68% in the pretest to 84% in the posttest) in learning more about heart attack and stroke symptoms. Approximately 40% of those surveyed noticed the public service announcements (PSAs) regarding heart attack and stroke. Perceptions regarding stroke and heart attack symptoms closely mirror the results of the pretest survey. Further review of the evaluation results is planned. **Program contact:** Amy Carte, Cardiovascular Health Program, West Virginia Bureau for Public Health.

- The *Georgia CVH Program* has four main components in its communication plan: media advocacy, public relations, advertising, and social marketing. Its major social marketing campaign, "Take Charge of Your Health," is coordinated through the Georgia Coalition for Physical Activity and Nutrition (GPAN). The campaign goal is to communicate three simple messages: Take Action (walk, dance, play), Take 5-A-Day (fruits and vegetables), and Take Down Fat (choices, portions, and preparation). Media for conveying these three messages statewide include billboards, radio PSAs, and educational programs in schools for youth and in community settings for all age groups. Campaign evaluation and communication training for GPAN members and district chronic disease coordinators are under way. **Program contact:** Pamela Wilson, Cardiovascular Health Program, Division of Public Health, Georgia Department of Human Resources.

Professional Development, Training, and Technical Assistance

State heart disease and stroke prevention programs should identify ways to meet the training needs of their staff, partners, and others. Training and technical assistance should be provided to help state and local health department staff and partners acquire the skills needed to support the development and implementation of the CVH state plan. This training may include areas such as population-based interventions, policy and environmental strategies, cardiovascular diseases and related risk factors, primary and secondary prevention strategies, health communication, cultural competency, epidemiology and use of data in program planning, media relations, strategic planning, program management, and evaluation. The state might also provide tech-nical assistance on implementing programs in health care sites, work sites, schools, and communities.

State health departments should assess CVH-related training needs and ensure that ongoing training and skill building are available for state and local health department staff, their CVH partners, health care and human service providers, and priority populations. States also might assist or collaborate

with partners (e.g., AHA, managed care organizations, academic institutions) to provide professional and public education. States need to look for imaginative ways to provide training and skill building, including the use of technology and Web-casting. States should encourage staff to participate in national and regional training programs and conferences and then disseminate what they learn statewide.

State Examples:

- The *Montana CVH Program,* in collaboration with the University of Washington School of Medicine, the Montana Diabetes Project, the Montana Obesity Prevention Program, the Department of Health and Human Services' Office on Women's Health (Region VIII), AHA, and the University of Montana School of Pharmacy and Allied Health Sciences, sponsored a CVH summit in April 2002. The summit provided training on primary and secondary prevention of CVD, with an emphasis on environmental, policy, and system interventions. Strategies to address the needs of priority populations also were highlighted. **Program contact:** Crystelle Fogle, Cardiovascular Health Program, Montana Department of Public Health and Human Services.

- The *Nebraska CVH Program* has developed and conducted a training program for local and state partners (e.g., representatives of local and district health departments, AHA, minority organizations, work site wellness groups, education groups) on environmental and policy strategies to promote CVH. Entitled S.T.E.P.S. (Strategies Toward Environment and Policy Success) for a Healthy Heart, the program addresses policies and environments specific to work sites, schools, faith communities, and the community in general. Participants have used the training materials as a planning tool and as an aid in implementing pilot community projects. Materials are available from the training program. **Program contact:** Jamie Hahn, Cardiovascular Health Program, Nebraska Health and Human Services System.

Funding

Because federal funding for state heart disease and stroke prevention programs only began in 1998, it is difficult to estimate the funding states need to carry out all of the components of a comprehensive program. One state, which we call "state x" here, has developed an estimate that may or may not be typical of other states.

State X, with about 9 million people and heart disease and stroke rates above the national average, needs CVH funding to address the following issues: heart disease and stroke, health promotion, racial disparities in CVD burden, epidemiology, public awareness, high blood pressure, high cholesterol levels, tobacco use, physical inactivity, poor nutrition, diabetes, and obesity. Of its 2001 CVH budget, approximately 30% was from state sources, 55% was from federal sources (the Preventive Health and Health Services Block Grant; CDC's CVH, WISEWOMAN, diabetes, and tobacco programs; and the Department of Agriculture's Nutrition Challenge matching funds), and 15% was from private foundations. State X estimates that it would need $15.6 million to comprehensively address heart disease, stroke, high blood pressure, and cholesterol and the disparate burden of these diseases and conditions among some population groups, as well as an additional $2.7 million to address other risk factors and the associated conditions of diabetes, poor nutrition, obesity, and physical inactivity.

Supporting Evidence and Consensus Documents

In the 1980s, large community demonstration projects that tested multiple intervention approaches for improving CVH were conducted in Finland and the United States. Many of the core capacities that CDC recommends for state heart disease and stroke prevention programs are based on lessons learned from these projects.[9]

Results from these community projects suggested that state health departments can play critical roles in activities such as strategic planning, working with

other stakeholders, ensuring that projects are data-driven, supporting community participation, and providing guidance for quality assurance and intervention approaches. Project evaluators found that "interventions that simultaneously target the community environment as well as organizations, groups, and individuals tend to influence the public's health far more than interventions at any one of these levels alone."[9]

Results from these projects also indicated that policy and environmental interventions were often more effective than direct behavior-change strategies. Social marketing techniques were used to create awareness of CVH issues and to create demand for services, access to primary and secondary prevention, and support for public policy and environmental change.

In addition to the lessons learned from these studies, state health departments also should use the following resources when developing their own comprehensive state heart disease and stroke prevention programs:

- *Preventing Death and Disability from Cardiovascular Diseases: A State-Based Plan for Action.* CVD Plan Steering Committee, Association of State and Territorial Health Officials, 1994.
- Publications of the Advisory Board of the International Heart Health Conferences, including *The Victoria Declaration on Heart Health* (1992), *The Catalonia Declaration—Investing in Heart Health* (1996), *Worldwide Efforts to Improve Heart Health: A Follow-Up to the Catalonia Declaration—Selected Program Descriptions* (1997), and *The Singapore Declaration: Forging the Will for Heart Health in the Next Millennium* (1998).
- *Evaluating Community Efforts to Prevent Cardiovascular Diseases: Community Changes.* Department of Health and Human Services, CDC, 1995.
- *North Carolina Plan to Prevent Heart Disease and Stroke* 1999–2003. North Carolina Heart Disease and Stroke Prevention Task Force, 1999.

- *Women and Heart Disease: An Atlas of Racial and Ethnic Disparities in Mortality. Second Edition* and *Men and Heart Disease: An Atlas of Racial and Ethnic Disparities in Mortality. First Edition.* Available at www.cdc.gov/nccdphp/cvh.
- Policy as intervention: environmental and policy approaches to the prevention of cardiovascular disease. *Am J Public Health* 1995;85:1207-11.
- Community heart health programs: components, rationale, and strategies for effective interventions. *J Public Health Policy* 1993;14(4):463-79.
- Three articles in *Health Education Quarterly* in 1995 (volume 22, number 4): "Environmental and policy approaches to cardiovascular disease prevention through nutrition: opportunities for state and local action;" "Environmental and policy approaches to cardiovascular disease prevention through physical activity: issues and opportunities;" and "Environmental and policy interventions to control tobacco use and prevent cardiovascular disease."

National Leadership

CDC is committed to enhancing the infrastructure, leadership, and population-based programs that state health departments need to facilitate a comprehensive approach for CVH promotion and CVD prevention. CDC will support and collaborate with states on the following activities:

- Developing and implementing programs and policies.
- Building infrastructure by providing resources for professional training and continuous technical assistance and by strengthening capacity in other respects.
- Extending the database for CVH promotion and CVD prevention through new approaches to monitoring and surveillance of CVD-related factors in communities and states.
- Fostering the prevention research that will most directly advance policies and programs for CVH by resolving critical questions.

Forging National Partnerships

CDC has a formal partnership with AHA; the Centers for Medicare & Medicaid Services; the National Heart, Lung, and Blood Institute of the National Institutes of Health (NIH); NIH's National Institute of Neurological Disorders and Stroke; and the Office of Public Health and Science, HHS; through a memorandum of understanding that created the Healthy People 2010 Heart and Stroke Partnership. The goal of the partnership is to maximize the participating organizations' investments in CVH and to capitalize on their individual strengths to achieve the *Healthy People 2010* goal for preventing heart disease and stroke. The partnership divided this goal into the following four separate areas based on the different intervention approaches that would be needed to achieve them:

* Prevention of risk factors.
* Detection and treatment of risk factors.
* Early identification and treatment of heart attacks and strokes.
* Prevention of recurrent cardiovascular events.

The Healthy People 2010 Heart and Stroke Partnership has improved communication, coordination, and collaboration at the national, state, and local levels. Activities proposed by the partnership to meet the *Healthy People 2010* goal and targets include

* Conducting population- and community-based health education and health promotion.
* Coordinating public awareness messages and media activities.
* Effecting environmental, policy, and system changes.
* Jointly promoting professional education and training, including joint presentations, co-hosting of national conferences, dissemination of best practices, and joint consultation on cardiovascular issues for conferences and workshops.
* Facilitating relationship development, support, data collection, and resource sharing.
* Sharing scientific and information resources.

Examples of accomplishments to date include

* Developing a Healthy People 2010 Heart and Stroke Partnership database of activities, which will eventually be made available to the public.
* Developing and implementing the *Act in Time to Heart Attack Signs* campaign, including a joint press conference.
* Developing a year one evaluation report of the strategic partnership.
* Cosponsoring *Cardiovascular Health for All: Meeting the Challenge of Healthy People 2010—A National Conference,* which was held on April 11-13, 2002, in Washington, D.C.

Developing the Cardiovascular Health Collaborative

In 1998, the Health Resources and Services Administration, CDC's Division of Diabetes Translation, and the Institute for Health Improvement formed the National Diabetes Collaborative to aggressively address chronic disease by reducing disparities and increasing access to quality care in federally qualified community health centers. In April 2001, the first Cardiovascular Health Collaborative was initiated and integrated with the Diabetes Collaborative. In July 2002, the collaborative provided training and support to help community health centers and state heart disease and stroke prevention programs improve quality of care by implementing a chronic care model and an improvement process model for CVD management. Future training is planned.

Developing the Action Plan

During 2001–2002, CDC convened more than 100 experts from state, local, national, and international organizations, tribal organizations, and others beyond the health sector to develop a public health strategy to prevent and control heart disease and stroke. This plan addresses the *Healthy People 2010* goal for preventing heart disease and stroke, as well as the two overarching goals of improving the quality and increasing the duration of Americans' lives and eliminating health disparities. The recommendations outlined in this plan will require the involvement and collaboration of a broad array of organizations.

The process included work by five expert panels, which were each asked to address one of the following five components considered essential to the action plan:

- Taking action: putting present knowledge to work.
- Strengthening capacity: improving the organization and structure of public health agencies and partnerships.
- Evaluating impact: monitoring the burden, measuring progress, and communicating urgency.
- Advancing policy: defining the issues and finding the needed solutions.
- Engaging in regional and global partnerships: multiplying resources and capitalizing on sharing experience.

The plan will help chart a course for CDC, state and local health departments, and other partners to achieve national goals for preventing heart disease and stroke over the next 2 decades and beyond. To develop a comprehensive public health strategy for the plan, an action framework was developed that outlines the present reality, a vision of the future, and six broad intervention approaches that can help achieve this vision. The action plan is expected to be available in spring 2003.

Communicating Key Messages

In addition to developing a CVH edition of CDCynergy and providing states with training in its use, CDC is also supporting two projects that include training materials, communication guides, and other materials that state heart disease and stroke prevention programs can use for communicating with decision makers about the role of policies in promoting environmental change for heart health and for communicating with the public about the signs and symptoms of stroke.

Stimulating Priority Research and Translation

CDC provides data, data analysis, applied research, and publications to help ensure that state heart disease and stroke prevention programs have the latest information to assist with state planning and priority setting. CDC's Heart Disease and Stroke Prevention Program translates and disseminates to states and others data and research results that have implications for state heart disease and stroke prevention programs and information on state interventions, lessons learned, and promising practices.

Five of the CDC program's top research priorities include

- Eliminating racial, ethnic, social class, and geographic disparities in CVD.
- Developing and strengthening primary and secondary prevention methods.
- Developing and strengthening policy and environmental interventions.
- Assessing emerging risk factors.
- Increasing understanding of the economic impact of CVD.

State-of-the-art information is available to states on the CDC Web site (www.cdc.gov/cvh), including interactive maps of county-level heart disease and stroke mortality rates. The CDC Heart Disease and Stroke Prevention Program disseminates evidence of substantial geographic, racial, and ethnic disparities in the burden of heart disease and stroke mortality by publishing atlases and these interactive maps. Results of applied research are conveyed to states through conference calls, the State Program listserv, and CDC-sponsored trainings.

Future research directions of the CDC Heart Disease and Stroke Prevention Program are being documented in a strategic research plan to be shared with states and others in 2003. The plan will prioritize research initiatives to advance knowledge about population-based approaches that promote cardiovascular health. Results from these initiatives will be translated and disseminated to public health and health care workers to help them tailor policies and programs to address health promotion and the primary and secondary prevention of heart disease and stroke.

Promoting Program Evaluation

Evaluation goals for state heart disease and stroke prevention programs are to document the following:

- Changes in state capacity to address CVH.
- CVD burden as determined by surveillance data.
- Changes in CVH policies and environmental supports.
- Process in implementing interventions and the impact of these interventions at the state level, within practice settings, and among priority populations.

Evaluation products that CDC has developed for states to use include the following:

- The *Evaluation Framework for State Heart Disease and Stroke Prevention Programs,* which describes the overall evaluation components of state heart disease and stroke prevention programs.
- The Heart Disease and Stroke Prevention State Program Logic Model, a graphic description of the state program that includes expected short-term, intermediate, and long-term outcomes (see Figure 1). By identifying the steps necessary to reach intended outcomes, the logic model indicates where emphasis should be placed in evaluating the process and outcomes of the program.
- *The State Heart Disease and Stroke Prevention Programs: Evaluation Concepts,* which assists states in developing evaluation plans for their own heart disease and stroke prevention programs.

These products are available from the CDC Heart Disease and Stroke Prevention Program. CDC also provides annual evaluation training for state heart disease and stroke prevention program staff and is developing an electronic management information system that will give state programs the ability to produce evaluation reports. The system also will enhance the technical assistance that CDC provides to state programs and will include state resources.

Promoting Professional Development

CDC provides state heart disease and stroke prevention programs with training and skill-building experiences through national conferences, informational conference calls, and workshops addressing areas such as CVH evaluation, the CVH edition of CDCynergy, the CVD Collaborative, and partnering with managed care. From 1999 to 2002, the Cardiovascular Health Practitioner's Institute provided intensive training and skill-building to state heart disease and stroke prevention program managers and AHA state health department liaisons from 12–15 states each year. The training was co-sponsored by CDC, the Association of State Chronic Disease Directors, AHA, and the University of Rochester Department of Community and Preventive Medicine. The goal of the training is to enhance participants' abilities to develop and maintain public health programs for preventing and controlling CVD, reducing related risk factors, eliminating disparities, and promoting CVH. The third institute was held September 24–29, 2002. In future years, an annual skill-building workshop will be provided to state heart disease and stroke prevention program staff from all states. CDC also provides other training programs, including the evidence-based chronic disease prevention training sponsored by Saint Louis University.

Progress to Date and Challenges Ahead

In 1998, the first eight states received CDC funding to establish heart disease and stroke prevention programs. As of June 2002, 29 states and the District of Columbia had CDC-funded state heart disease and stroke prevention programs. States are collaborating with new and different partners to coordinate efforts and avoid duplication. CDC is also increasing its efforts to coordinate activities among the different CDC programs that deal with CVH. Central to these efforts has been the establishment of CDC's Cardiovascular Health Coordinating Committee, which includes the directors of the Division of Adult and Community Health, the Division of Adolescent and School Health, the Division of Diabetes Translation, the Division of Nutrition and Physical Activity, and the Office on Smoking and Health. Collaboration among these divisions and offices facilitates

interaction with state programs in their respective areas and can help to streamline relationships at national and state levels.

In 2001, CVD became a major focus of collaboration among key national agencies when CDC entered into the Healthy People 2010 Heart and Stroke Partnership. (See the Forging National Partnerships section for a list of other partners.) Additional partnership agreements are in place with groups such as the Health Resources and Services Administration; the National Stroke Association; the American College of Cardiologists; Health Canada; and the Association of State and Territorial Health Officials, including its affiliates, the Association of State and Territorial Chronic Disease Program Managers, the Cardiovascular Council, and the Association of State and Territorial Directors of Health Promotion and Public Health Education. Agreements with both traditional and nontraditional partners are expected to increase at national and state levels; such partnerships stand to benefit all who are concerned with promoting CVH and preventing CVD.

The many challenges ahead for CDC, the states, and their partners as they work together to reduce the massive burden of CVD include the following:

- Mobilizing and coordinating national and state efforts.
- Garnering resources to fund programs in all 50 states and U.S. territories.
- Increasing efforts to reduce racial, ethnic, gender, and geographical disparities.
- Increasing CDC's capacity to help states address CVD.
- Identifying priorities and promising interventions.
- Enhancing the capacity of state health departments to implement policy and environmental strategies.
- Expanding surveillance and monitoring of heart disease and stroke.
- Increasing the science base for interventions.
- Increasing applied research and program evaluation.

Resources

Web Resources

Communications and Health Promotion

University of Kansas's Community Toolbox. ctb.lsi.ukans.edu. Provides information on how to develop, manage, and evaluate community projects; includes tools and helpful hints.

HealthComm KEY. www.cdc.gov/od/oc/hcomm/additsource.pdf. Provides communications resources.

CDCynergy. www.cdc.gov/communication/CDCynergy.htm. Provides an interactive CD-ROM designed as a decision-making tool and step-by-step guide for planning health communications programs. Contact the CDC Heart Disease and Stroke Prevention Program for the CVH version.

Social Marketing

www.social-marketing.com/. Provides information on social marketing publications and the latest news in the field.

Evaluation

www.cdc.gov/eval/resources.htm. Provides CDC evaluation resources, including logic models, evaluation standards, organizations, and evaluation concept documents.

University of Kansas's Community Toolbox, Evaluation Model. ctb.lsi.ukans.edu/tools/EN/section_1007.htm. Provides a model for evaluating comprehensive community initiatives.

Success Measures Guidebook. www.developmentleadership.net/smp/manual/ toc.htm. Provides a step-by-step guide for developing and implementing an evaluation plan and specific outcome indicators to help define success and effective allocation of resources.

Funding

University of Kansas's Community Toolbox, Grant Writing Tools. ctb.lsi.ukans.edu/tools/en/chapter_1042.htm. Provides information on how to apply and receive grants and other financial resources.

The Foundation Center. fdncenter.org. Provides the foundation's annual reports, directories, books, and periodicals on fund-raising, program planning, and current data on the nation's largest funders.

Interventions and Program Development

Centers for Disease Control and Prevention (CDC). www.cdc.gov/cvh. Provides information on heart disease, stroke, and state activities, including state program contacts.

Health Policy Coach. www.policymatters.org. Provides tools, strategies, and information for creating policy change in communities.

Health Disparity Collaboratives. www.bphc.hrsa.dhhs.gov/programs/ hdcprograminfo.htm. Provides information on interventions in federally qualified health centers to improve health outcomes, including management of CVD, in underserved populations.

Fit, Healthy, and Ready to Learn: School Health Policy Guide. www.nasbe.org/healthyschools/fithealthy.mgi. Provides direction on establishing an overall policy framework for school health programs and specific policies on physical activity, healthy eating, and tobacco-use prevention.

Get With the Guidelines. www.americanheart.org/presenter.jhtml? identifier=1165. Provides a hospital-based CVD quality improvement program.

G8 Promoting Heart Health Telematics Project. www.med.mun.ca/g8hearthealth. Provides a qualitative database of best practices for CVH programs; includes heart health issues such as tobacco control, diet, physical activity, psychosocial factors, hypertension, diabetes, and lipid management.

American Dietetic Association. www.eatright.org/gov/tools.html. Provides grassroots tools for food and nutrition policy.

Public Education Network: Communities at Work. www.publiceducation.org/interventions. Provides a guidebook of strategic interventions for engaging the community in school improvement to create systemic change through community dialogue, constituency building, engagement of practitioners, collaboration with districts, policy analysis, and legal strategies.

Turning Point Publications and Resource. www.wkkf.org/Programming/Resources. aspx?CID=8. Provides a variety of publications and resources produced by Turning Point (national initiative of the W.K. Kellogg and Robert Wood Johnson foundations) that provide actionable, evidence-based lessons for policy, practice, and research.

Center for Livable Communities. www.lgc.org/center/. Provides resources on building livable communities, including selected publications, manuals, conferences/trainings, and a land-use resource library.

National Committee for Quality Assurance. www.ncqa.org. Provides resources such as *The Business Case for Health Care Quality* and *The State of Managed Care Quality, 2001.*

Partnerships, Alliances, and Coalitions

University of Kansas's Community Toolbox, Community Work Station. ctb.lsi.ukans.edu/tools/CWS/coalitionbuilding/ create_maintain_coalitions.htm. Provides information on establishing and maintaining partnerships, including coalitions.

Collaboration: What Makes it Work. www.wilder.org/pubs/collab_wmiw/index.html. Provides a review of research literature on factors influencing successful collaboration among service delivery agencies.

Building Community Health Partnerships. www.communityhealthpartners.org/default.cfm. Provides information on successful community health partnership models.

Coalition for Healthier Cities and Communities. www.healthycommunities.org/usa/index.cfm. Provides information on a collaborative established to improve the quality of life in communities through community-based development and coalition building.

Surveillance and Research

National Center for Health Statistics. www.cdc.gov/nchs. Provides data systems on vital events, health status, lifestyle, exposure to unhealthy influences, the onset and diagnosis of illness and disability, and the use of health care.

Centers for Medicare & Medicaid Services. cms.hhs.gov. Provides CVD-related data and statistics.

National Heart, Lung, and Blood Institute. www.nhlbi.nih.gov/resources/index.htm. Provides scientific resources on heart disease.

American Heart Association/American Stroke Association. www.americanheart.org. Provides scientific resources on heart disease and stroke.

CDC CVH Statistical Information. www.cdc.gov/cvh/statisticalinfo.htm. Provides data such as interactive maps on county-specific heart disease mortality rates by state, racial/ethnic group, and gender.

Print Resources

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